DOCUMENT RESUME

ED 050 505 EC 032 219

| | |
|---|---|
| AUTHOR | Narin, Francis |
| TITLE | Analysis of Research Journals, and Related Research Structure, in Special Education. Final Report. |
| INSTITUTION | Computer Horizons, Inc., Chicago, Ill. |
| SPONS AGENCY | Office of Education (DHEW), Washington, D.C. Bureau of Research. |
| BUREAU NO | BR-0-E-073 |
| PUB DATE | Feb 71 |
| CONTRACT | OEC-5-70-0047(509) |
| NOTE | 45p. |
| EDRS PRICE | EDRS Price MF-$0.65 HC-$3.29 |
| DESCRIPTORS | *Bibliographic Citations, *Exceptional Child Research, General Education, Information Utilization, *Periodicals, Psychology, *Research Reviews (Publications), Speech Education, *Use Studies |

ABSTRACT

To provide insight into the organization, interrelationship, and importance of the relevant areas of research related to special education, a study was made of citings to and from a core of journals in special education, psychology and general education. The basic data consisted of cross citings related to the special education literature. A total of 118 journals were chosen for inclusion in the analysis. It was found that there was a much stronger tie from special education to psychology than from special education to general education. General and special education were both felt to be dependent upon psychology and relatively independent of one another. It was concluded that in fields where there was a relatively high degree of organization of knowledge, the journals tended to be concentrated in their referencing, with a large fraction of references in a given journal to a relatively small number of journals. In fields which drew upon many different areas of knowledge, and which themselves had small bases of accepted knowledge, it was felt that the referencing structure tended to be quite dispersed. (CD)

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ED050505

FINAL REPORT
Project No. O-E-073
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# ANALYSIS OF RESEARCH JOURNALS, AND RELATED RESEARCH STRUCTURE, IN SPECIAL EDUCATION

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February 1971

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

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The research reported herein was performed pursuant to a contract with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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# ANALYSIS OF RESEARCH JOURNALS, AND RELATED RESEARCH STRUCTURE, IN SPECIAL EDUCATION

## I. SUMMARY

To provide insight into the organization and importance of various areas of research related to special education, a study was made of the citings to and from a core of journals in special education, and to and from related journals in psychology and general education. The basic data was the number of times one journal cited another, that is, cross citings related to the special education literature.

A total of 118 journals were chosen for inclusion in the analysis by progressing from a few key special education journals to the journals heavily cited by the key journals. In turn, the journals cited by the cited journals were surveyed, etc., until the citing chains closed upon journals which were already considered, or were clearly out of the field of interest. Of the 118 journals scanned, 31 contained far fewer than 500 references in the 1965-1969 time period, and were excluded from further consideration because they were not heavily enough referenced to provide reliable data. Five of the journals scanned were found to be completely out of the field of interest; and three journals could not be located in the Chicago area. Of the remaining 79 journals 19 were classified as special education, 26 as general education, and 34 as psychology.

It was found that there is a much stronger tie from special education to psychology than from special education to general education. The dependency relations appear to be general education and special education are both dependent upon psychology, and relatively independent of one another. The referencing structure of general education is highly dispersed, that of special education seems to be somewhat less highly dispersed, and that of psychology not nearly as dispersed.

Based on the citing of one journal by another, a skeleton library in special education would include the following journals:

- American Journal of Mental Deficiency
- Child Development
- Exceptional Children
- Journal of Abnormal and Social Psychology
- Journal of Experimental Psychology

Additional journals which would enhance the special education base coverage would be:

- American Annals of the Deaf
- Children
- Journal of Learning Disabilities
- Journal of Special Education
- Journal of Speech and Hearing Disorders
- Journal of Speech and Hearing Research
- Mental Retardation
- New Outlook for the Blind
- Sight-Saving Review
- Special Education
- Volta Review

A more extensive library should include:

- American Journal of Orthopsychiatry
- Behaviour Research and Therapy
- Journal of the Acoustical Society of America
- Journal of Clinical Psychology
- Journal of Comparative and Physiological Psychology
- Journal of Consulting and Clinical Psychology
- Journal of Counseling Psychology
- Journal of Educational Psychology
- Journal of Mental Deficiency Research
- Journal of Nervous and Mental Diseases
- Journal of Personality
- Journal of School Psychology
- Mental Hygiene
- Perceptual and Motor Skills
- Psychological Bulletin
- Psychological Review
- Psychonomic Science

This list contains all journals cited more than five times per quarter by the included special education journals.

## II. INTRODUCTION

To expedite organization, research, and teaching in special education it is desirable to understand the interrelationship and importance of the relevant areas of research. Since the journal literature is the fundamental medium for reporting research, it is reasonable to expect that the structure of the journal literature could lead to this understanding of the structure of the relevant research knowledge.

The need of a research scientist for an empirical frame of reference has been pointed out for the research scientist by Guilford.[1]

> "Any serious investigator, in basic science or in technology, finds a good frame of reference very helpful. A frame of reference may be as broad as a philosophical point of view or as circumscribed as a limited scientific theory... An investigator without focused efforts is likely to pick away at minor problems, here and there, as fancy of the moment dictates or as an opportunity comes his way... A good frame of reference for an investigator's purpose has three important specifications: It should be comprehensive, it should be systematic, and it should be empirically based."

In addition to the research scientist, the college of education teacher, the education librarian and the special education teacher themselves could all benefit from a firm frame of reference defining their fields of activity.

With this need in mind, the specific objectives of this research project were the following:

Objective 1: To develop a series of empirically based models of the special education journal structure.

Objective 2: To develop measures of the utilization, connectivity and dependency between journals in the models, and other measures which reflect the degree of interrelationship and importance of the journals and disciplines.

Publications pertinent to the subject of literature models and measures are rather peripheral. Although there have been significant scholarly investigations of the scientific literature, most of these have concentrated on individual paper referencing or citing, rather than aimed toward developing general models of the journal or disciplinary structure.

Kessler[2] in 1964 did group together the citations in 20 physics journals, and from this created a to/from matrix of the percent of cross referencing between the journals. This matrix can be turned into a hierarchic model of the physics literature by the procedures described later.

Van Cott and Zavala[3] did some factor analytic studies of the periodical literature in physics, and interpreted their results as revealing journal groups within physics. They used the subject category from Physics Abstracts as the basic classifier, and tabulated and analyzed the number of articles in a given category in 74 different journals,

obtaining a correlation matrix and, from this, a ten factor solution, as well as other analyses.

Citation indexing has been discussed extensively by Garfield[4] as a means of locating literature related to a given problem by tabulating all of the papers which cite a given paper; however, since the average number of times per year an individual paper is cited is less than one, this does not present a general picture of interrelationships. Along the same lines Margolis[5] mentions de Solla Price's suggestion of using citation indexing as a measure of the value of a paper, albeit one complicated by the time lag (average citation peak three years after publication) and necessity to take into account survival value after the first peak of citations.

Bradford[6] in 1948 published a mathematical formulation of the fact that most of the papers in a given specialty appear in a few core journals, but that papers of interest will be found scattered through a great many journals. Brookes[7] has recently reviewed the work in this area subsequent to Bradford's paper. One problem associated with this type of study is that the inclusion/exclusion decisions are human judgment decisions; the citation index studies usually get around this somewhat since they represent the judgment of the specific citers acting independently (although influenced by cliques, styles, etc.). This research takes the methodologies a step farther by coalescing all of the references in a journal.

## III. METHODS

### A. Hand Tabulated Journal Data

Figure 1 shows a typical summary report for the tabulation of the references in a journal. In the Journal of Learning Disabilities there were, from January 1968 through June 1970, a total of 1268 references of which 525 references were to journal articles, 549 references were to books, and 194 were references to other sources such as meetings, symposia, government reports, private communications, etc. These summaries were obtained by starting at the first page of the journal and tabulating every single reference in every article in the journal.

For each journal scanned at attempt was made to tabulate 500 journal references in the last quarter of 1969; however, many of the journals did not have this many references in that time period so the time period was stretched out to include, if necessary, all issues of the journal back to 1965. For some journals there were far fewer than 500 references even over that time period; these journals were excluded from further analysis.

Journal Title: J. Learn. Dis. Date: 8/17/70

Publisher: Professional Press Inc. Researcher: RMF

Vol. No. Dates: Vol. 1, No. 1-12;
Vol. 2, No. 1-12;
Vol. 3, No. 1-6
(68, Jan-Dec;
69, Jan-Dec;
70, Jan-June)

Project: Ed

Publication Frequency: Monthly

| | | | |
|---|---|---|---|
| 549 | Book References | 124 | Papers Tabulated |
| 194 | Other References | 207 | Journals Referred to |
| 525 | Journal References | 3.81 | % Journal Self Referencing |
| 1268 | Total References | 59 | Journals Contain 66.7% of Journal References |

| | Journal | # Refs. | Tot. # Refs. | % Refs. | Tot. % Refs. |
|---|---|---|---|---|---|
| 1st | Exceptional Children | 26 | 26 | 4.95 | 4.95 |
| 2nd | J Learning Dis | 20 | 96 | 3.81 | 8.76 |
| 3rd | Perceptual & Motor Skills | 19 | 65 | 3.62 | 12.38 |
| 4th | J Genetic Psych | 17 | 82 | 3.24 | 15.62 |
| 5th | Am J Orthopsychiatry | 17 | 99 | 3.24 | 18.86 |
| 6th | J Ed Res | 15 | 114 | 2.86 | 21.71 |
| 7th | Cortex | 12 | 126 | 2.29 | 24.00 |
| 8th | J Ed Psych | 11 | 137 | 2.10 | 26.10 |
| 9th | JAMA | 11 | 148 | 2.10 | 28.10 |
| 10th | J Consultant Psych | 10 | 158 | 1.90 | 30.10 |

| # Journals | # Ref./Jour. | # Refs. | Tot. # Refs. | % Refs. | Tot. % Refs. |
|---|---|---|---|---|---|
| 1 | 10 | 10 | 168 | 1.90 | 32.00 |
| 1 | 8 | 8 | 178 | 1.52 | 33.52 |
| 4 | 7 | 28 | 204 | 1.33 | 38.86 |
| 4 | 6 | 24 | 228 | 1.14 | 43.43 |
| 6 | 5 | 30 | 258 | 0.95 | 49.14 |
| 8 | 4 | 32 | 290 | 0.75 | 55.24 |
| 12 | 3 | 36 | 326 | 0.57 | 62.10 |
| 38 | 2 | 76 | 402 | 0.38 | 76.57 |
| 123 | 1 | 123 | 525 | 0.19 | 100.00 |

FIGURE 1 - SUMMARY REPORT--JOURNAL REFERENCE TABULATION

Returning to Figure 1, the journal most frequently cited is Exceptional Children, to which there are 26 references in the time period. The next most frequently cited journal is the Journal of Learning Disabilities itself with 20 references, followed by Perceptual and Motor Skills, etc. After tabulating the top 10 journals individually, the remaining journals were summarized; for example, after the Journal of Counseling Psychology, with 10 references, there was an additional journal cited 10 times, there was 1 journal cited 8 times, 4 journals cited 7 times, 4 journals cited 6 times, etc. to 123 journals cited once.

The above tabulation, for each of the journals included, gives a picture of the citing structure of the journal. However, the parameter of most interest was the citations to a journal, rather than the citations from a journal, since citations to a journal measure the utilization of a journal by research scientists. To keep the data consistent, the tabulation of citings to journals was normalized to a quarter of a year. For example, if a journal contained 100 references in the year 1969, then those citings were reduced by a factor of 4 to correspond to a quarter. This, of course, does introduce some uncertainty into the data since journals are not entirely uniform during any particular time period.

B. ISI Data

For a number of the journals, particularly those in psychology and medicine it was possible to use data from the Journal Citation Index (JCI)* which was purchased from the JCI publisher, the Institute for Scientific Information in Philadelphia. The JCI is a reformatted, sorted version of the Science Citation Index (SCI).*

Figure 2 summarizes the Journal Citation Index. Approximately one million citations from 2180 journals are contained in the Index in the last quarter of 1969. There are two listings to the Journal Citation Index, a source journal listing which summarizes the references from a journal, and the cited journal listing which summarizes the references to a journal. As shown in the figure, American Journal of Mental Deficiency cites itself 107 times, and cites other journals as listed. For journals contained in the JCI, that data was used in preference for hand tabulated data, if there were more than 500 citations in the JCI. For journals in which there were fewer than 500 citations in the JCI, the JCI data was supplemented by hand tabulated data.

---

*Copywrite 1970, the Institute for Scientific Information.

## Journal Citation Index

Last Quarter 1969 - 2,180 Journals
- 1,000,000 Citations
- 65,000 Lines each, source and cited tapes

Source Journals Listing

Summarizes the references from a journal

Example: In the last quarter of 1969, Am J M Def contains 566 references, including references to

| | |
|---|---|
| Am J M Def | 107 times |
| J Exp Psych | 16 times |
| Ment Ret | 13 times |
| J Exp An Be | 10 times |
| J Com Physl | 8 times |
| . | |
| . | |
| . | |

Cited Journal Listing

Summarizes the references to a journal

Example: In the last quarter of 1969, Am J M Def is cited 193 times, including citings by

| | |
|---|---|
| Am J M Def | 107 times |
| Psych Repts | 19 times |
| J Abn Psych | 10 times |
| Act Paed Sc | 5 times |
| Develop Med | 5 times |
| . | |
| . | |
| . | |

FIGURE 2 - ISI DATA

C. Journal Coverage

An initial list of 15 journals to be scanned were chosen from those listed in Camp[9] and in Lins and Rees.[10] From these 15 journals the successive journals were chosen by including the journals which were most frequently cited by the initial group of journals, and then by looking at the journals most frequently cited by the second group, etc. The first and second most frequently cited journals were always included, as were any journals that appeared to lie within special education, until either a journal already included was cited or a journal was obviously out of the area of interest. Journals out of the area of interest, for example, were journals that were purely medical, such as the Journal of the American Medical Association. The journals linking the special education journals to the medical journals were included.

Table 1 lists all 118 journals which were considered for inclusion in the models and measures. The comments show the journals which were not included for the indicated reasons. For example, 31 journals contained significantly fewer than 500 references since 1965. These were considered to be too poorly referenced to yield reliable data. In addition, five of the journals, on inspection, were clearly out of the field of interest, and three could not be located in Chicago.

Table 2 shows the 79 remaining journals, classified by subject field. An initial subject classification was made on the basis of the classifications in the starting lists, and the names of the journals; this was revised during the scan to correspond to the nature of the articles in the journals, the nature of the journal referencing structure, and the Library of Congress classification. In this list the journals are classified with the other journals which they most closely resembled (see notes in Section VII). Indicated in the table are the number of references in the journal per quarter, one indicator of the contents of a journal.

## IV. RESULTS

### A. One-Step Models and Measures

Figures 3 and 4 show the general one-step model. In this model an arrow is drawn from a journal to the journal to which it refers most frequently (other than itself). For example, on the lower right in Figure 4 both the Journal of Learning Disabilities and the Gifted Child Quarterly refer most frequently to Exceptional Children, which then refers to the American Journal of Mental Deficiency, which in turn then refers most frequently to the Journal of Experimental Psychology. In addition, a series of other journals, the

TABLE 1

ALL SURVEYED JOURNALS

| Abbreviation | Journal Name | Comments |
|---|---|---|
| Acad Ther | Academic Therapy | |
| Am Ann Deaf | American Annals of the Deaf | |
| Am Ed Res J | American Educational Research Journal | |
| Am Educ | American Education | Not enough references |
| Am J M Def | American Journal of Mental Deficiency | Classed as psychiatry by the Library of Congress |
| Am J Oc The | American Journal of Occupational Therapy | Out of field |
| Am J Orthop | American Journal of Orthopsychiatry | |
| Am Psych | American Psychologist | |
| Aud Vis In | Audiovisual Instruction | Not enough references |
| Beh Res The | Behaviour Research and Therapy | |
| Br J Ed Psy | British Journal of Educational Psychology | |
| Bull Orton | Bulletin of the Orton Society | Not enough references |
| Child Dev | Child Development | |
| Child Ltd | Children Limited | Not enough references (newspaper) |
| Child Welf | Child Welfare | Not enough references |
| Childhd Ed | Childhood Education | Not enough references |
| Children | Children | |
| Comp Ed Rev | Comparative Education Review | |
| Contemp Ed | Contemporary Education | Not enough references |
| Counsl Ed | Counselor Education and Supervision | |

TABLE 1 (Cont)

ALL SURVEYED JOURNALS

| Abbreviation | Journal Name | Comments |
|---|---|---|
| D Ment Ret | Digest of the Mentally Retarded | Not located in Chicago |
| Ed Digest | Education Digest | Not enough references |
| Ed Ment Ret | Education of the Mentally Retarded | Not enough references |
| Ed Psy Meas | Educational and Psychological Measurement | |
| Educ Forum | Educational Forum | |
| Educ Record | Educational Record | Not enough references |
| Educ Res | Educational Research | |
| Educ Theory | Educational Theory | Not enough references |
| Education | Education | |
| Elem Eng | Elementary English | Not enough references |
| Elem Sch J | Elementary School Journal | |
| Excpt Child | Exceptional Children | |
| Gif Child Q | Gifted Child Quarterly | |
| Harv Ed Rev | Harvard Educational Review | |
| Hear Speech | Hearing and Speech News | Not enough references |
| High School | High School Journal | |
| Hist of Ed | History of Education Quarterly | Not enough references |
| I J Ed Blnd | International Journal for Education of the Blind | Never located |
| I Reh Rev | International Rehabilitation Review | Not enough references |
| I Rev Ed | International Review of Education | Not enough references |

TABLE 1 (Cont)

ALL SURVEYED JOURNALS

| Abbreviation | Journal Name | Comments |
|---|---|---|
| Instructor | Instructor | Not enough references |
| J Abn Psych | Journal of Abnormal and Social Psychology | Combination of Journal of Abnormal Psychology and Journal of Personality and Social Psychology |
| J Acoust So | Journal of the Acoustical Society of America | References gathered only from the psychology sections |
| J Am Stat A | Journal of the American Statistical Association | Arbitrarily classified as a psychology journal for this analysis |
| J Appl Beh | Journal of Applied Behavior Analysis | |
| J Appl Psyc | Journal of Applied Psychology | |
| J Audit Res | Journal of Auditory Research | Out of field |
| J Clin Psyc | Journal of Clinical Psychology | |
| J Com Physl | Journal of Comparative and Physiological Psychology | |
| J Cons Clin | Journal of Consulting and Clinical Psychology | |
| J Coun Psyc | Journal of Counseling Psychology | |
| J Educ | Journal of Education | |
| J Educ Meas | Journal of Educational Measurement | |
| J Educ Psyc | Journal of Educational Psychology | |
| J Educ Res | Journal of Educational Research | |
| J Exp Child | Journal of Experimental Child Psychology | |

TABLE 1 (Cont)

ALL SURVEYED JOURNALS

| Abbreviation | Journal Name | Comments |
|---|---|---|
| J Exp Educ | Journal of Experimental Education | |
| J Exp Psych | Journal of Experimental Psychology | |
| J Higher Ed | Journal of Higher Education | Not enough references |
| J Learn Dis | Journal of Learning Disabilities | |
| J Ment Def | Journal of Mental Deficiency Research | |
| J Negro Ed | Journal of Negro Education | Out of field |
| J Nerv Ment | Journal of Nervous and Mental Disease | |
| J Pers | Journal of Personality | |
| J Reading | Journal of Reading | |
| J Reh Deaf | Journal of Rehabilitation of the Deaf | |
| J Rehab | Journal of Rehabilitation | |
| J Res Sci | Journal of Research in Science Teaching | |
| J Sch Heal | Journal of School Health | |
| J Sch Psyc | Journal of School Psychology | |
| J Sec Educ | Journal of Secondary Education | |
| J Soc Psyc | Journal of Social Psychology | |
| J Sp He Di | Journal of Speech and Hearing Disorders | |
| J Sp He Re | Journal of Speech and Hearing Research | |
| J Spec Ed | Journal of Special Education | |

TABLE 1 (Cont)

ALL SURVEYED JOURNALS

| Abbreviation | Journal Name | Comments |
|---|---|---|
| J Teach Ed | Journal of Teacher Education | |
| J Vrb Lrn | Journal of Verbal Learning and Verbal Behavior | |
| Liberal Ed | Liberal Education | Not enough references |
| Ment Hyg | Mental Hygiene | |
| Ment Ret | Mental Retardation | |
| Nat School | Nation's Schools | Not enough references |
| Nea Res B | NEA Research Bulletin | Not enough references |
| New Outlook | New Outlook for the Blind | |
| Perc Mot Sk | Perceptual and Motor Skills | |
| Perc Psych | Perception and Psychophysics | |
| Pers Guidan | Personnel and Guidance Journal | |
| Phi Delta | Phi Delta Kappan | Not enough references |
| Pointer | Pointer | Not enough references |
| Psyc School | Psychology in the Schools | |
| Psych Bull | Psychological Bulletin | |
| Psych Repts | Psychological Reports | |
| Psych Rev | Psychological Review | |
| Psychomet | Psychometrika | |
| Psychonom S | Psychonomic Science | |
| Q J Speech | Quarterly Journal of Speech | Out of field |
| Read Res Q | Reading Research Quarterly | |
| Read Teach | Reading Teacher | |
| Record | Record | |

TABLE 1 (Cont)

ALL SURVEYED JOURNALS

| Abbreviation | Journal Name | Comments |
|---|---|---|
| Reh Couns B | Rehabilitation Counseling Bulletin | |
| Rehab Lit | Rehabilitation Literature | Not enough references |
| Res Quart | Research Quarterly | |
| Rev Ed Res | Review of Educational Research | |
| Sch Rev | School Review | |
| Sch Soc | School and Society | Not enough references |
| Sci Educ | Science Education | Out of field |
| Sightsaving | Sight-Saving Review | |
| Soc Educ | Social Education | Not enough references |
| Soc of Educ | Sociology of Education | |
| Sp Ed Can | Special Education Canada | Not enough references |
| Sp Ed Rev | Special Education Review | Not enough references |
| Spec Educ | Special Education | |
| Speech Tchr | Speech Teacher | Out of field |
| Tch Exc Chl | Teaching Exceptional Children | Not enough references |
| Tchr Deaf | Teacher of the Deaf | Not located in Chicago |
| Today's Ed | Today's Education | Not enough references |
| Tran Sch B | Training School Bulletin | |
| Volta Rev | Volta Review | |
| Yng Child | Young Children | |

TABLE 2

INCLUDED JOURNALS, CLASSIFIED BY FIELDS

| Journal | Refs/ Quart | Journal | Refs/ Quart |
|---|---|---|---|
| **SPECIAL EDUCATION (19 Journals)** | | | |
| Acad Ther | 33 | J Sp He Di | 65 |
| Am Ann Deaf | 25 | J Sp He Re | 173 |
| Am J M Def | 250 | Ment Ret | 70 |
| Children | 11 | New Outlook | 16 |
| Excpt Child | 97 | Sightsaving | 15 |
| Gif Child Q | 18 | Spec Educ | 14 |
| J Learn Dis | 53 | Tran Sch B | 35 |
| J Rehab | 20 | Volta Rev | 37 |
| J Reh Deaf | 18 | Yng Child | 18 |
| J Spec Ed | 274 | | |
| **GENERAL EDUCATION (26 Journals)** | | | |
| Am Ed Res J | 65 | J Exp Educ | 71 |
| Br J Ed Psy | 105 | J Reading | 29 |
| Child Dev | 169 | J Res Sci | 57 |
| Comp Ed Rev | 21 | J Sch Heal | 63 |
| Education | 31 | J Sec Educ | 19 |
| Educ Forum | 21 | J Teach Ed | 57 |
| Educ Res | 87 | Read Res Q | 58 |
| Elem Sch J | 71 | Read Teach | 67 |
| Harv Ed Rev | 31 | Record | 29 |
| High School | 29 | Res Quart | 169 |
| J Educ | 26 | Rev Ed Res | 22 |
| J Educ Meas | 43 | Sch Rev | 36 |
| J Educ Res | 85 | Soc of Educ | 46 |
| **PSYCHOLOGY (34 Journals)** | | | |
| Am J Orthop | 160 | J Ment Def | 103 |
| Am Psych | 156 | J Nerv Ment | 564 |
| Beh Res The | 125 | J Pers | 113 |
| Counsl Ed | 45 | J Sch Psyc | 81 |
| Ed Psy Meas | 123 | J Soc Psyc | 161 |
| J Abn Psych | 1487 | J Vrb Lrn | 274 |
| J Acoust So | 51 | Ment Hyg | 81 |
| J Am Stat A | 205 | Perc Mot Sk | 615 |
| J Appl Beh | 66 | Perc Psych | 313 |
| J Appl Psyc | 132 | Pers Guidan | 125 |
| J Clin Psyc | 128 | Psych Bull | 494 |
| J Com Physl | 1208 | Psych Repts | 525 |
| J Cons Clin | 248 | Psych Rev | 179 |
| J Coun Psyc | 200 | Psyc School | 101 |
| J Ed Psyc | 146 | Psychomet | 92 |
| J Exp Child | 135 | Psychonom S | 2024 |
| J Exp Psych | 912 | Reh Couns B | 26 |

FIGURE 3 - ONE-STEP MODEL (PART 1)

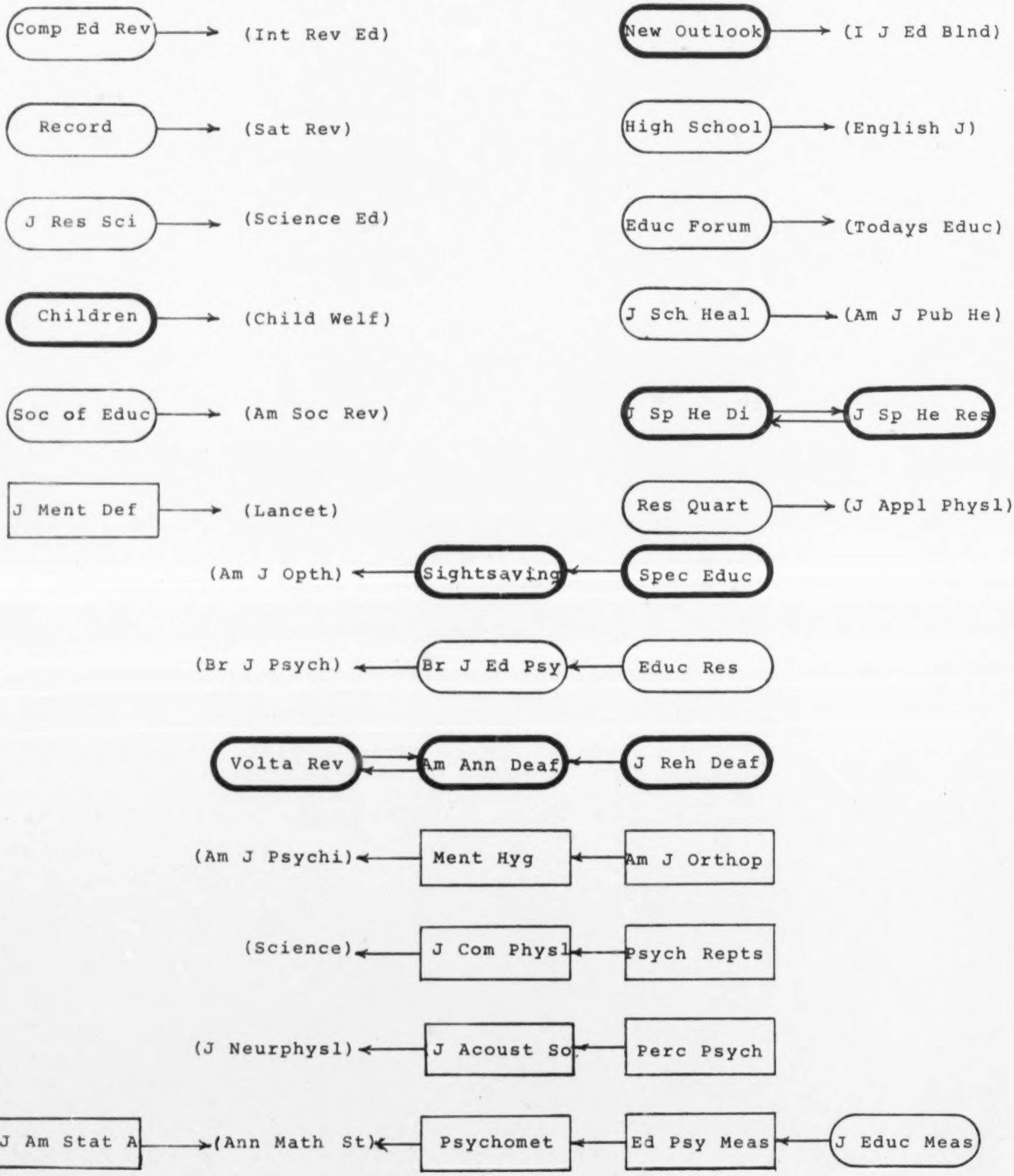


FIGURE 3 - ONE-STEP MODEL (PART 1)

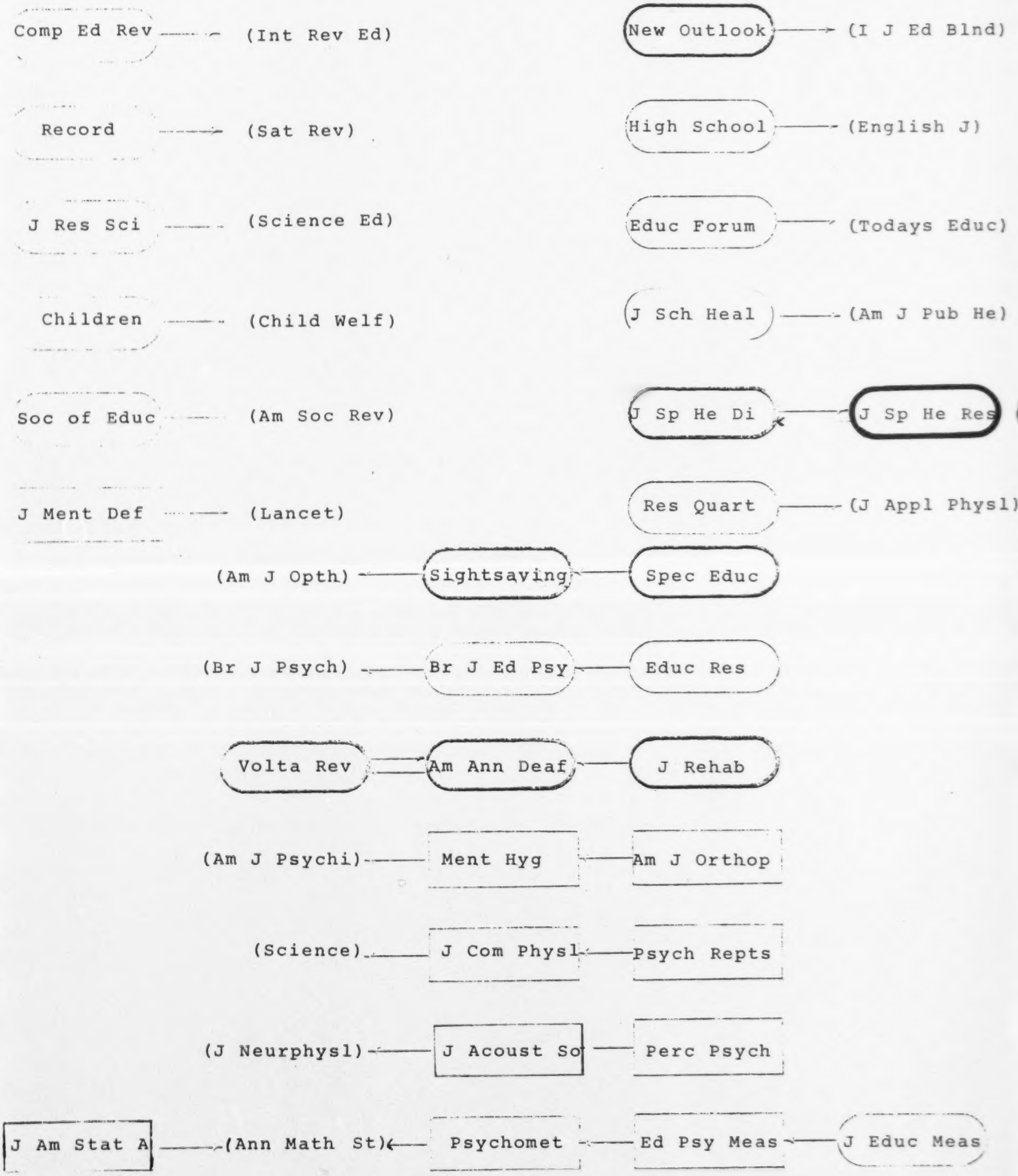


FIGURE 4 - ONE-STEP MODEL (PART 2)

FIGURE 4 - ONE-STEP MODEL (PART 2)

Journal of Special Education, the Journal of Education, Review of Educational Research, the Training School Bulletin, and Mental Retardation all cite the American Journal of Mental Deficiency more than any other journal, except perhaps for themselves. Thus even this very simple model leads to the immediate identification of the American Journal of Mental Deficiency as a journal which is very heavily utilized.

On the figure the journals classified as special education, general education, and psychology are shown as follows: special education with heavy ovals, general education with light ovals, and psychology with rectangles. Journals referred to, but not scanned, are shown in parenthesis.

Of the journals classified as special education, the most frequently first referenced is the American Journal of Mental Deficiency, which has four arrows in from other special education journals and two from general education. The next most heavily utilized of the special education journals are Exceptional Children and American Annals of the Deaf, which have two arrows in from special education. On Figures 3 and 4 the four journals, Journal of Speech and Hearing Research, Volta Review, Journal of Speech and Hearing Disorders, and Sight-saving Review, each have one arrow in from special education and none from any other field.

It should be apparent, from the one-step figures, that these journals tend to be rather disconnected. This is characteristic of the special education literature, and is definitely not characteristic of the literature in many of the physical sciences.[11] It is also clear that many of the journals in general education and special education refer into psychology, either directly or through their reference to a journal such as the American Journal of Mental Deficiency, which then references a psychology journal.

B. Two-Step Models

Figures 5 and 6 show the two-step models. In the two-step models an arrow is drawn from a journal to the two journals to which it refers most frequently (other than itself). For example, the Journal of Rehabilitation, near the bottom of Figure 6, refers to the Journal of Abnormal and Social Psychology and the Psychological Bulletin as its two most frequently cited journals. No distinction is made on the model between the first and second most frequently cited journals. As would be expected there is much more connectivity on a two-step model than on the one-step model. The dependencies of general and special education on psychology are especially apparent from this figure.

FIGURE 5 - TWO-STEP MODEL (PART 1)

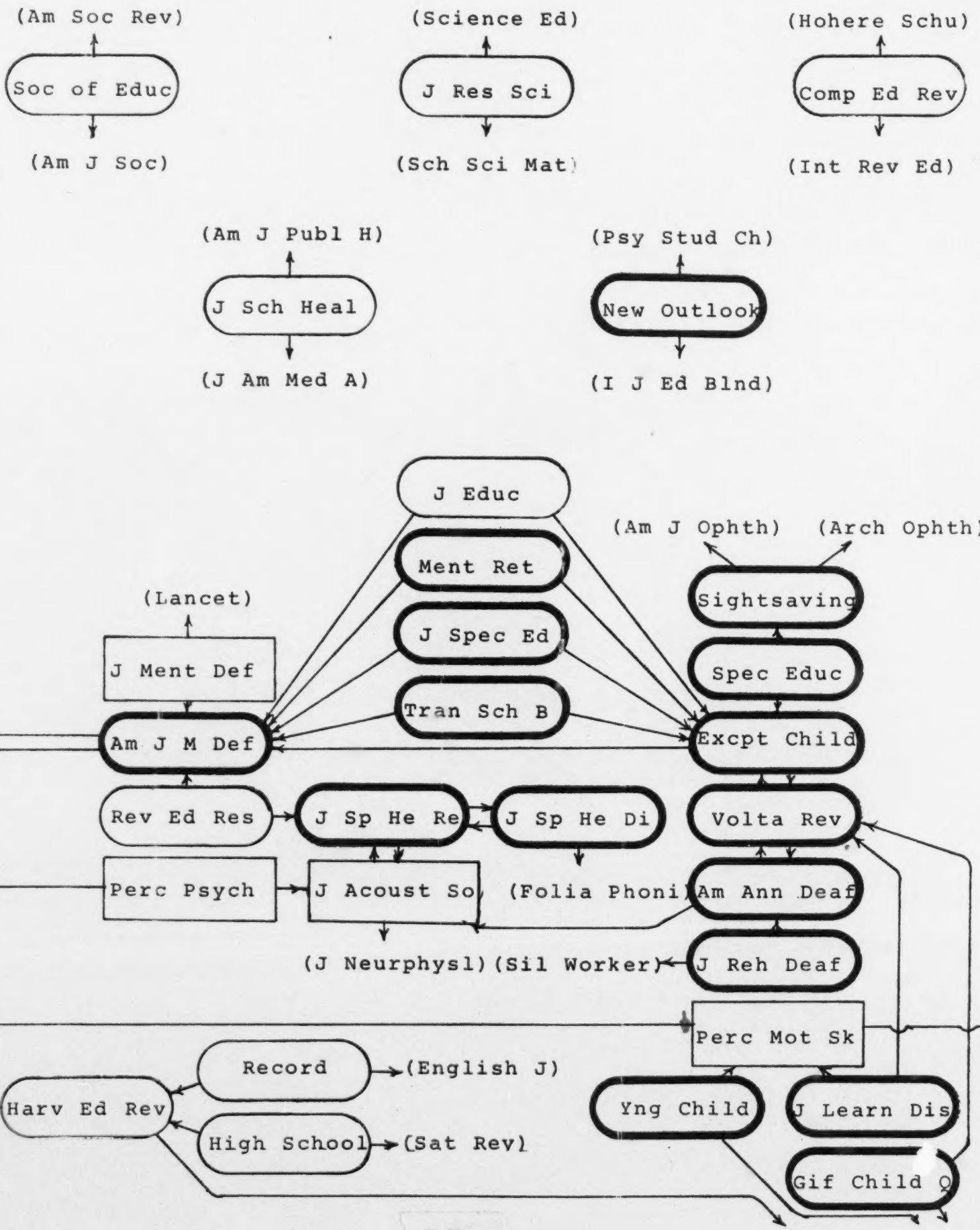


FIGURE 5 - TWO-STEP MODEL (PART 1)

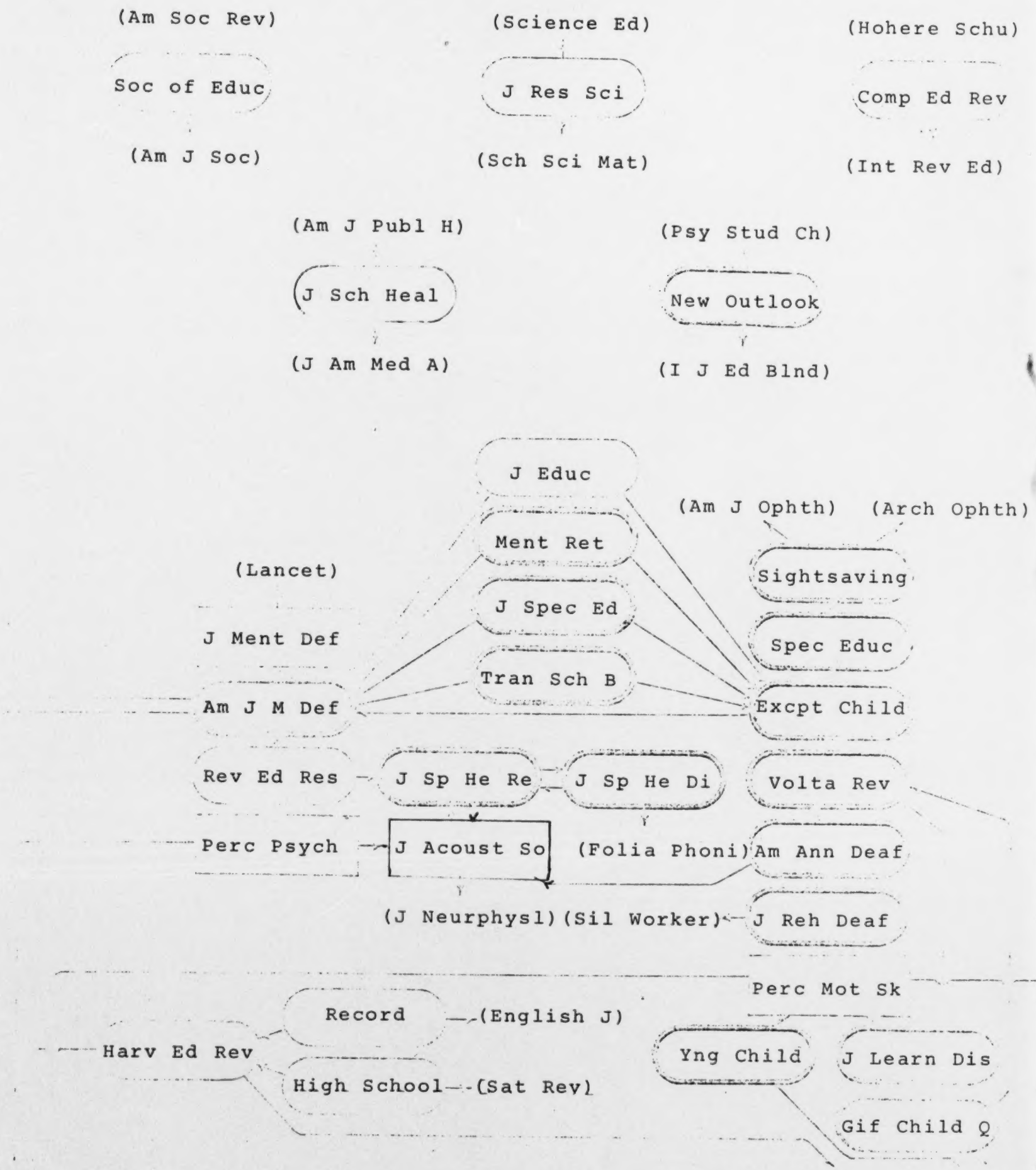


FIGURE 6 - TWO-STEP MODEL (PART 2)

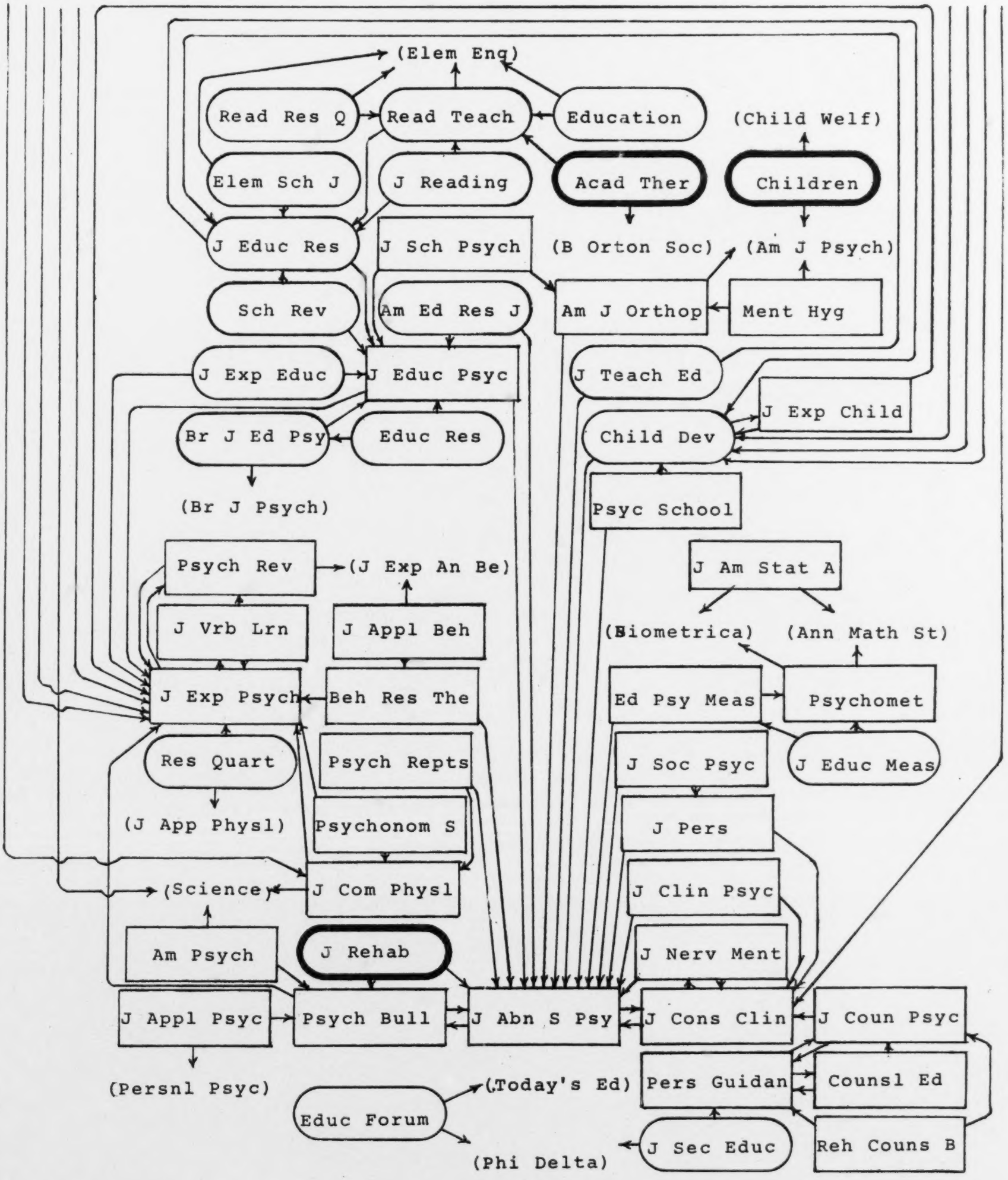


FIGURE 6 - TWO-STEP MODEL (PART 2)

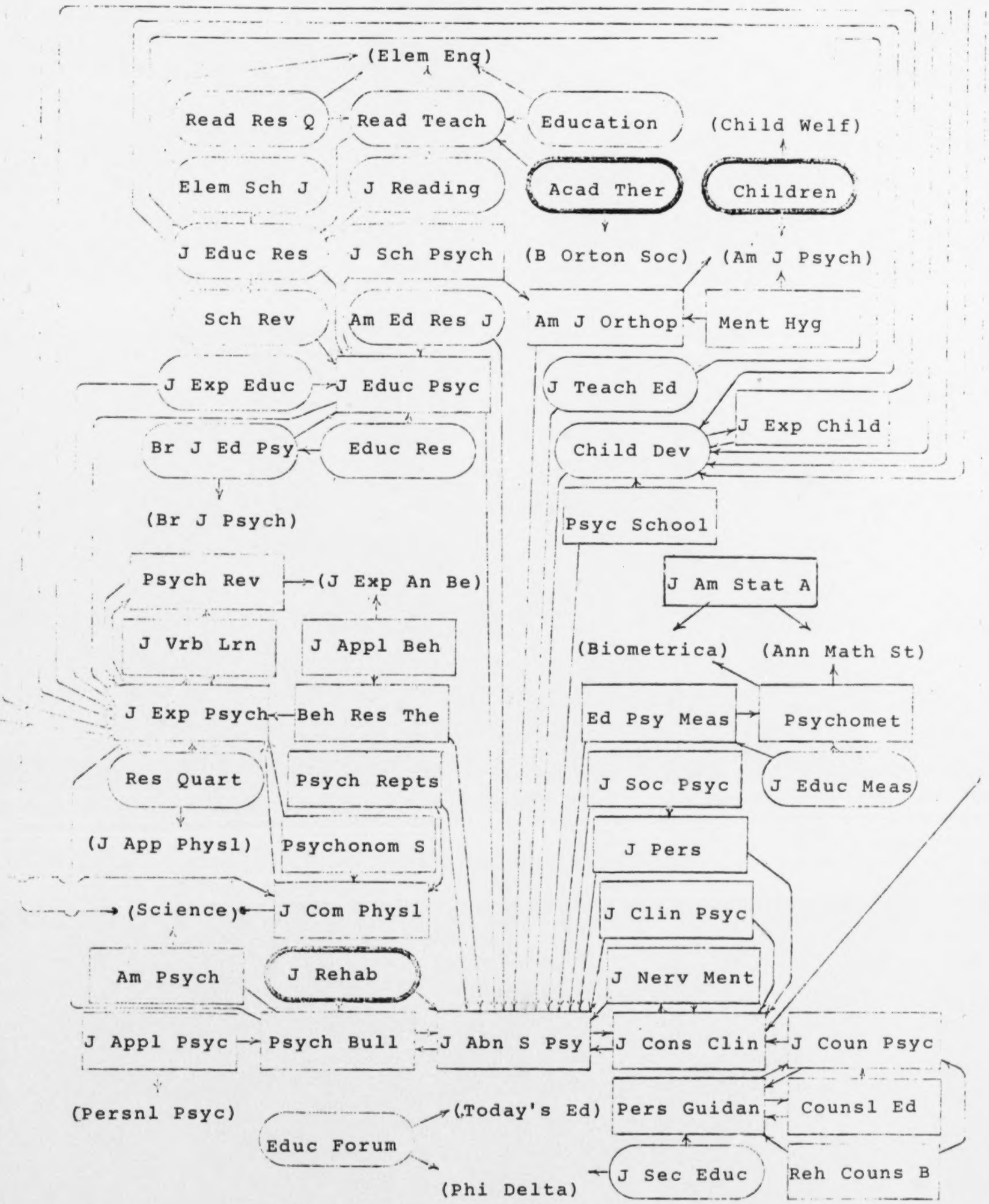


Table 3 shows the one- and two-step arrows grouped by fields. For example, from psychology there are 27 arrows on the one-step model into psychology and none into either general education or special education. From general education there are 14 arrows of which 7 go into psychology, 6 to general education and 1 into special education. From special education there are 17 arrows of which 2 go into psychology, 2 go into general education, and 13 go into special education.

On the same table, at the two-step level, the arrows are even somewhat more revealing. Psychology, as before, shows a minimal dependence upon general education and special education, but special education does show its primary dependence upon itself, its secondary dependence upon psychology, and tertiary dependence upon general education. General education, in turn, is primarily dependent on general education, next upon psychology, and then upon special education.

Table 4 tabulates the arrows into specific journals on the one- and two-step models. Included in the tabulation are all journals on which there is data; that is, journals that are sufficiently well referenced to be included in our models, and which are referred to by other journals in our models.

Of the special education journals clearly the most frequently referred to, in the sense of the arrows, is the American Journal of Mental Deficiency followed closely by Exceptional Children, then by Volta Review and the other four listed. Relatively new journals, such as the Journal of Learning Disabilities, are, of course, unfairly slighted in this tabulation.

Of the general education journals the ones most frequently referred to are Child Development, Journal of Educational Research, and Reading Teacher.

By far the most frequently referred to journals are the psychological journals. Some of this is due to the fact that the psychological journals refer first to themselves. However, more general education journals refer to psychology journals first than refer to general education journals first, a strong indicator of the key nature of psychology as a source of information for education research. Similarly, more special education journals refer first to psychology journals than refer first to general education journals, although the special education journals do refer first and second to themselves more than to psychology.

TABLE 3

ONE- AND TWO-STEP ARROWS AMONG INCLUDED JOURNALS, GROUPED BY FIELDS

| Into | From | | | |
|---|---|---|---|---|
| | Psychology | General Education | Special Education | Total Into |
| | | One-Step | | |
| Psychology | 27 | 7 | 2 | 36 |
| General Education | 0 | 6 | 2 | 8 |
| Special Education | 0 | 1 | 13 | 14 |
| Total From | 27 | 14 | 17 | 58 |
| | | Two-Step | | |
| Psychology | 48 | 8 | 8 | 64 |
| General Education | 2 | 13 | 3 | 18 |
| Special Education | 1 | 4 | 18 | 23 |
| Total From | 51 | 25 | 29 | 105 |

TABLE 4

ARROWS INTO INCLUDED JOURNALS ON THE ONE- AND TWO-STEP MODELS

| | from One-Step | | | | from Two-Step | | | |
|---|---|---|---|---|---|---|---|---|
| | Psych | Gen Educ | Spec Educ | Total | Psych | Gen Educ | Spec Educ | Total |
| Into Psych | | | | | | | | |
| J Abn Psych | 7 | 1 | 0 | 8 | 12 | 3 | 1 | 16 |
| J Exp Psych | 6 | 0 | 1 | 7 | 10 | 2 | 1 | 13 |
| J Cons Clin | 2 | 0 | 0 | 2 | 6 | 0 | 0 | 6 |
| J Educ Psyc | 1 | 4 | 0 | 5 | 0 | 6 | 0 | 6 |
| Pers Guidan | 3 | 1 | 0 | 4 | 3 | 1 | 0 | 4 |
| Psych Bull | 2 | 0 | 1 | 3 | 3 | 0 | 1 | 4 |
| J Coun Psyc | 1 | 0 | 0 | 1 | 3 | 0 | 0 | 3 |
| J Com Physl | 1 | 0 | 0 | 1 | 2 | 0 | 1 | 3 |
| Am J Orthop | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| J Acoust So | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 2 |
| Perc Mot Sk | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| Psych Rev | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| Psychomet | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 2 |
| Beh Res The | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| Counsl Ed | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Ed Psy Meas | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| J Exp Child | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| J Nerv Ment | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| J Pers | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| J Vrb Lrn | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| Total | 27 | 7 | 2 | 36 | 48 | 8 | 8 | 64 |
| Into Gen Educ | | | | | | | | |
| Child Dev | 0 | 2 | 1 | 3 | 2 | 2 | 2 | 6 |
| J Educ Res | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 |
| Read Teach | 0 | 2 | 1 | 3 | 0 | 3 | 1 | 4 |
| Harv Ed Rev | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| Br J Ed Psy | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| Total | 0 | 6 | 2 | 8 | 2 | 13 | 3 | 18 |
| Into Spec Educ | | | | | | | | |
| Am J M Def | 0 | 1 | 5 | 6 | 1 | 2 | 4 | 7 |
| Excpt Child | 0 | 0 | 2 | 2 | 0 | 1 | 5 | 6 |
| Volta Rev | 0 | 0 | 1 | 1 | 0 | 0 | 4 | 4 |
| Am Ann Deaf | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 2 |
| J Sp He Re | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 2 |
| J Sp He Di | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| Sightsaving | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| Total | 0 | 1 | 13 | 14 | 1 | 4 | 18 | 23 |
| Grand Total | 27 | 14 | 17 | 58 | 51 | 25 | 29 | 105 |

It should also be clear from the table that the Journal of Abnormal and Social Psychology and the Journal of Experimental Psychology occupy dominant positions amongst the psychological journals. The next set of important psychological journals are the Journal of Consulting and Clinical Psychology and Journal of Educational Psychology.

C. Hierarchy

Figure 7 shows a generalized hierarchy of areas of knowledge and Figure 8 the specific journal hierarchy from which Figure 7 was abstracted. In Figure 7 an area of knowledge is placed above another area of knowledge if the journals in the first area are more dependent upon the journals in the second than the reverse. For example, School Psychoboy journals, all the way at the top, are more dependent upon Abnormal and Experimental Psychology journals, at the bottom, than Abnormal and Experimental Psychology journals are dependent upon School Psychology journals.

This figure reveals the rather general characteristics of the interrelationship of the areas of knowledge of importance to special education. In particular the base of knowledge seems to definitely be within abnormal and experimental psychology, with one line of dependence upon these from the school, behavioral, and child psychology areas, and another line dependent upon these from general education and special education.

Figure 8 shows the specific detailed hierarchy of journals. In Figure 8 a journal A is placed above a journal B if A references to B a larger percentage of the time than B references to A. This relationship is transitive, and holds between any two journals anywhere on the hierarchy. Where there is a significant relationship between adjacent journals, which is defined as more than one percent of the references from one journal to the other, there is an arrow on the hierarchy. Where journals do not have a significant relationship with an adjacent journal, there is a line. For example, at the end of the fourth branch from the bottom, the American Journal of Mental Deficiency refers more to the Journal of Mental Deficiency Research more than the reverse, and there is at least one percent referencing between them. Continuing across that branch the Journal of Mental Deficiency Research and Perception and Psychophysics refer to one another less than one percent of the time, and from the point of the hierarchy could be interchanged in position. Perception and Psychophysics then has a significant relationship with the Journal of Verbal Learning and Verbal Behavior. From the point of hierarchal position, every journal on a branch could be placed at the junction with the connecting journal in the main stream; that is, the Journal of Educational Psychology

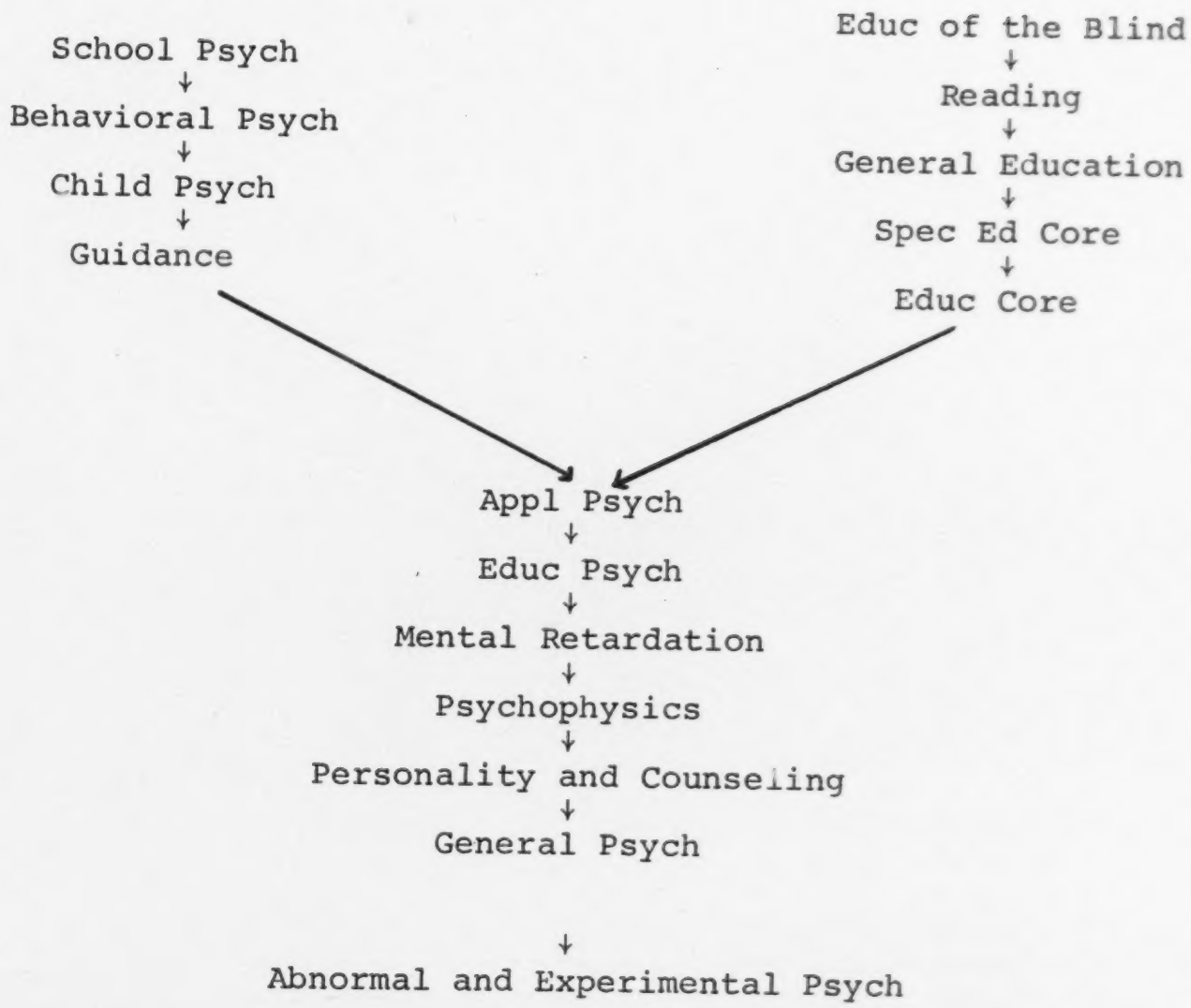



FIGURE 7 - GENERALIZED HIERARCHY

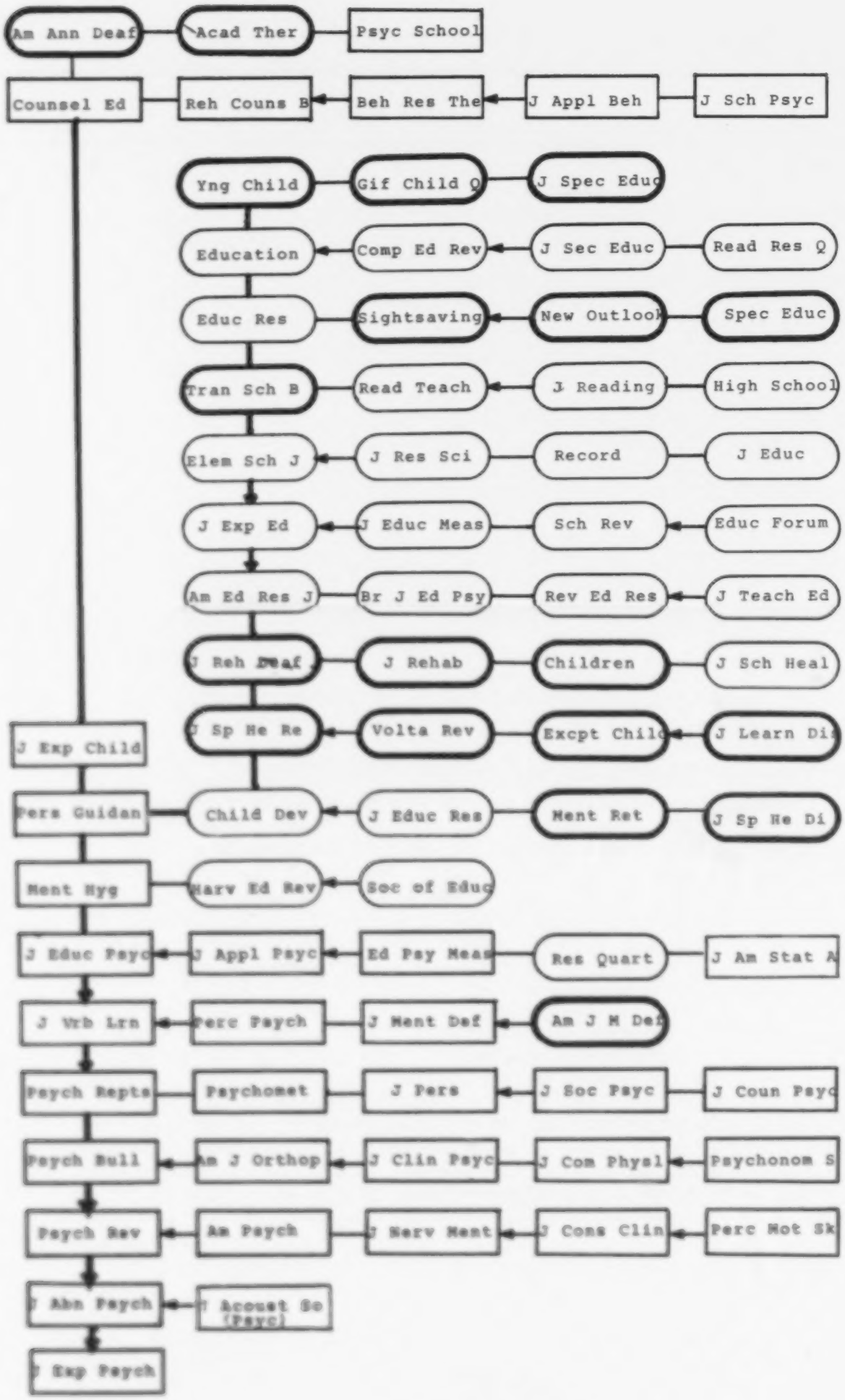



FIGURE 8 - DETAILED HIERARCHY

refers to the Journal of Verbal Learning and Verbal Behavior more than the reverse, as does every other journal on the branch from the Journal of Educational Psychology.

From the differentiation on Figure 8 between the special education journals, the general education journals and the psychology journals, it can be seen that there is a fair amount of interspersing of general education and special education, but the psychological journals are the base for both. It also appears, but not quite as clearly, that the special education journals are more closely dependent upon the psychology journals than they are upon the general education journals.

In constructing a hierarchy of this kind there are always a number of conflicts, that is, pairs of journals which do not have the dependence relationship implied by the hierarchy. On this particular hierarchy there are 692 significant relational pairs; that is, there are 692 journal pairs where at least one of the relationships is implied by greater than one percent of the references. Of the 692 pairs 20 are in conflict with the figure, or a conflict rate of less than three percent. This very low rate of conflict lends credence to the objective existence of a hierarchy of this kind. These specific conflicts are listed in Table 5.

D. Direct Utilization

To arrive at a direct measure of the utilization of one journal by another journal, or of one field by another field, it is necessary to count all of the cross references in a given time period; however due to irregularities in publication schedule, and to the desire to get enough references from a given journal to have a reliable picture of its referencing structure, it becomes necessary to consider journals over varying periods of time. As mentioned previously an attempt was made to count at least 500 references in the last quarter of 1969 for all of the journals. Where this was not possible a longer time period was taken. In those cases the time period over which the data was obtained was noted, so that the data could be normalized.

Table 6 shows the cross field journal citings per calendar quarter for the included journals. For example, there are, in a typical quarter, 265 references from special education into psychology, 60 references from special education into general education, and 409 references from special education into special education. In addition there are 511 references from special education into journals which were not included in our analysis. The total of these is 1245 references, of which 59 percent were to the three areas of psychology, general education, and special education which are included in this study. Note that the dependence

TABLE 5

LIST OF SIGNIFICANT (> 1%) CONFLICTS

| | | |
|---|---|---|
| Percept Motor Skills | → | J Clin Psych |
| J Comp Phys Psych | → | Psych Repts |
| Psychonom Sci | ← | Percept Motor Skills |
| Psychometrika | ← | J Consult Clin Psych |
| Rev Educ Res | ← | Pers Guidance |
| Elem School J | ← | J Teach Educ |
| J Educ Psych | ← | J Soc Psych |
| J Appl Psych | ← | J Couns Psych |
| Child Dev | ← | Psych Repts |
| Child Dev | ← | Am J Orthopsychiat |
| Child Dev | ← | Harvard Ed Rev |
| Child Dev | ← | J Educ Psych |
| J Reading | → | Educ |
| Educ Psych Meas | ← | J Clin Psych |
| Spec Educ | ← | J Rehab |
| Gifted Child Q | ← | Rev Educ Res |
| J Spec Educ | ← | Rev Educ Res |
| Mental Retardation | → | J Exp Child Psych |
| Am Annals Deaf | ← | Volta Rev |
| New Outlook Blind | ← | Rev Educ Res |

There were 692 significant (>1%) relational pairs on the hierarchy. 20 conflicts give a 2.9% rate of conflicts.

Note: (→)means that left hand journal should be above the right hand journal in the hierarchy but has not been placed there because that would cause additional conflicts.

TABLE 6

CROSS FIELD JOURNAL CITINGS/QUARTER
(Included Journals)

| Into | From | | | |
|---|---|---|---|---|
| | Psychology | General Education | Special Education | Total |
| Psychology | 6,100 | 325 | 265 | 6,690 |
| General Education | 163 | 402 | 60 | 625 |
| Special Education | 96 | 48 | 409 | 553 |
| Other Journals Not Included | 5,038 | 731 | 511 | 6,280 |
| Total Journal References | 11,397 | 1,506 | 1,245 | 14,148 |
| Total Journal References to Journals Included in Our Sample | 56% | 51% | 59% | 56% |

or utilization of psychology by special education is very much larger than utilization of general education by special education. Also it can be seen that general education utilizes psychology much more than special education.

Table 7 shows the individual quarterly journal citings from the included special education journals. Of the special education journals cited by special education journals by far the most frequently cited is the American Journal of Mental Deficiency, followed by the Journal of Speech and Hearing Disability, followed by Exceptional Children, etc. Of the psychology journals cited by special education journals, the most frequently cited is the Journal of Abnormal and Social Psychology, the next most frequently the Journal of Acoustical Society of America (psychology section), next the Journal of Experimental Psychology, followed by Perceptual and Motor Skills, etc. Of the general education journals cited by special education, by far the most frequently cited is Child Development, trailed very much by the British Journal of Educational Psychology and Educational Research, etc.

Table 8 shows the cross field citing percentages for the included journals. Thus, from special education 37 percent of the references are to psychology, 8 percent to general education, and 55 percent to special education. From general education 36 percent are to psychology, 41 percent to general education, and 23 percent to special education. From psychology, 95 percent are to psychology.

Table 9 shows all the journals that were cited more than five times per quarter by the included special education journals. This list might then be a basis for a reasonably comprehensive special education library which would consist of 12 special education journals, 4 general education journals, and 20 psychology journals. Of course, journals of specialized or local interest which would not be identified in a survey of this type, may well be of great interest in a particular library.

E. Dispersion

In the course of this and other studies of the journal literature[11] it has been noted that, in fields where there is a relatively high degree of organization of knowledge, the journals tend to be rather concentrated in their referencing, with a large fraction of the references in a given journal to a relatively small number of journals. On the other hand, in fields which are drawing upon many different areas of knowledge, and which have in themselves relatively small bases of accepted knowledge, the referencing structure tends to be quite dispersed.

TABLE 7

JOURNALS CITED BY INCLUDED
SPECIAL EDUCATION JOURNALS

| Special Education | | Psychology | | General Education | |
|---|---|---|---|---|---|
| Journal | Citings/ Quart. | Journal | Citings/ Quart. | Journal | Citings/ Quart. |
| Am J M Def | 147 | J Abn Psych | 21 | Child Dev | 21 |
| J Sp He Di | 61 | J Acoust So | 19 | Br J Ed Psy | 6 |
| Excpt Child | 49 | Am J Orthop | 17 | Educ Res | 6 |
| J Sp He Re | 43 | J Exp Psych | 17 | J Educ Res | 5 |
| Am Ann Deaf | 29 | Perc Mot Sk | 17 | J Exp Educ | 4 |
| Ment Ret | 22 | J Cons Clin | 16 | Harv Ed Rev | 3 |
| Volta Rev | 19 | J Educ Psyc | 16 | Read Teach | 3 |
| New Outlook | 6 | Beh Res The | 13 | Rev Ed Res | 3 |
| Spec Educ | 6 | J Sch Psyc | 13 | Elem Sch J | 2 |
| Children | 5 | Psych Bull | 12 | Am Ed Res J | 1 |
| J Spec Ed | 5 | J Clin Psyc | 11 | Education | 1 |
| Sightsaving | 4 | Psych Rev | 11 | High School | 1 |
| Gif Child Q | 3 | J Com Physl | 10 | J Sch Heal | 1 |
| Tran Sch B | 3 | J Exp Child | 10 | J Sec Educ | 1 |
| J Learn Dis | 2 | J Ment Def | 6 | J Teach Ed | 1 |
| J Rehab | 2 | J Pers | 6 | Res Quart | 1 |
| J Reh Deaf | 1 | J Coun Psyc | 5 | Sch Rev | 1 |
| Yng Child | 1 | J Nerv Ment | 5 | Soc of Educ | 1 |
| Acad Ther | 0 | Ment Hyg | 5 | Comp Ed Rev | 0 |
| | | Psychonom S | 5 | Educ Forum | 0 |
| | | Am Psych | 4 | J Educ | 0 |
| | | J Vrb Lrn | 4 | J Educ Meas | 0 |
| | | Psych Repts | 4 | J Reading | 0 |
| | | Ed Psy Meas | 3 | J Res Sci | 0 |
| | | J Soc Psyc | 3 | Read Res Q | 0 |
| | | Pers Guidan | 3 | Record | 0 |
| | | J Appl Psyc | 2 | | |
| | | Psyc School | 2 | | |
| | | Psychomet | 2 | | |
| | | J Appl Beh | 1 | | |
| | | Perc Psych | 1 | | |
| | | Reh Couns B | 1 | | |
| | | Counsl Ed | 0 | | |
| | | J Am Stat A | 0 | | |

TABLE 8

CROSS FIELD CITING PERCENTAGES
FOR INCLUDED JOURNALS

| | |
|---|---|
| **From Psychology** | |
| To Psychology: | 95% |
| To General Education: | 3% |
| To Special Education: | 2% |
| **From Special Education** | |
| To Psychology: | 37% |
| To General Education: | 8% |
| To Special Education: | 55% |
| **From General Education** | |
| To Psychology: | 36% |
| To General Education: | 41% |
| To Special Education: | 23% |

TABLE 9

JOURNALS CITED MORE THAN FIVE TIMES/QUARTER
BY INCLUDED SPECIAL EDUCATION JOURNALS

Special Education Journals

Am J M Def
J Sp He Re
Excpt Child
J Sp He Di
Ment Ret
Volta Rev
Am Ann Deaf
New Outlook
Spec Educ
Children
J Spec Ed
J Learn Dis*

General Education Journals

Child Dev
Br J Ed Psy
Educ Res
J Educ Res

Psychology Journals

J Exp Psych
J Abn Psych
J Com Physl
J Cons Clin
Psych Rev
Psych Bull
Perc Mot Sk
J Educ Psyc
J Coun Psyc
J Clin Psyc
J pers
Beh Res The
Am J Orthop
J Acoust So
J Exp Child
J Sch Psyc
J Ment Def
J Nerv Ment
Ment Hyg
Psychonim S

*New journal, which probably belongs in this category.

A measure of this is the 66 percent dispersion shown in Figure 9, which is simply the number of journals which have to be tabulated in order to contain two-thirds of all of the references from a given journal. For example, on Figure 9 the psychology journal listed first, Counselor Education and Supervision, has a dispersion measure of 3. This says that two-thirds of the journal references from that journal are contained in three journals. Similarly two-thirds of the references in the Journal of the American Statistical Association are contained in 7 journals, and so forth.

Figure 9 reveals a very definite difference between the three fields of psychology, general education, and special education. In particular the journals in psychology tend to be relatively concentrated while those in special education are more dispersed and those in general education are very dispersed. Although each field has a wide distribution of dispersion for journals within its field, it still should be clear that the fields are quite different in the average dispersions of their journals.*

Figure 10 is a histogram of the dispersions shown in Figure 9. The progression of typical dispersion is clear, from 1 to 20 in psychology, to 10 to 20 in special education, to 20 to 30 in general education.

## V. CONCLUSIONS

The fundamental conclusion of this study is that special education, as a field, is much more dependent upon and closely tied to psychology than it is to general education. The body of knowledge upon which special education draws appears to be less widely dispersed than the body of knowledge upon which general education draws. General education also draws much more upon psychology than upon special education.

From the point of view of research planning it seems clear that the research relevant to special education research is mainly in special education itself, and in psychology. This implies that certain areas of psychology are

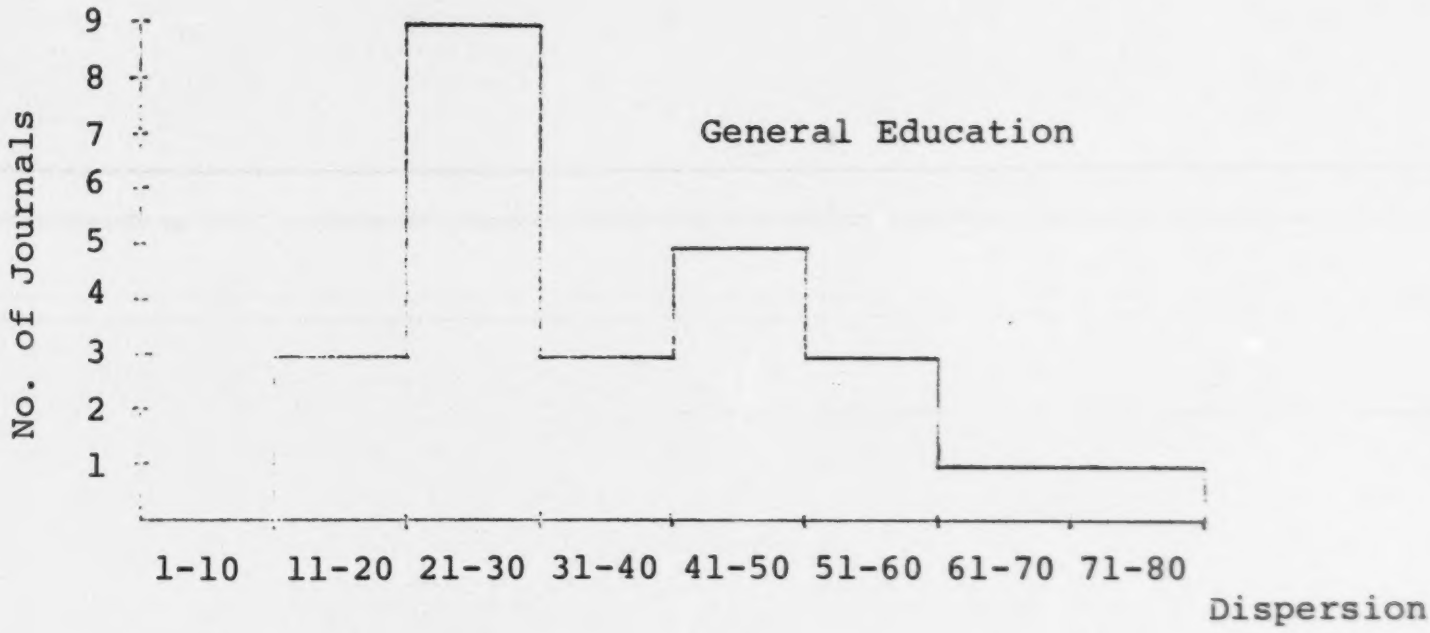
*Because there is a finite number of journals to which a journal refers, there is some tendency for dispersion to decrease, initially, as the number of references increases. Due to the ISI/Hand Data mix, more references were usually considered from psychology journals than from education journals; thus there may be a slight bias in the data, leading to an overestimate of the dispersion of the education journals.

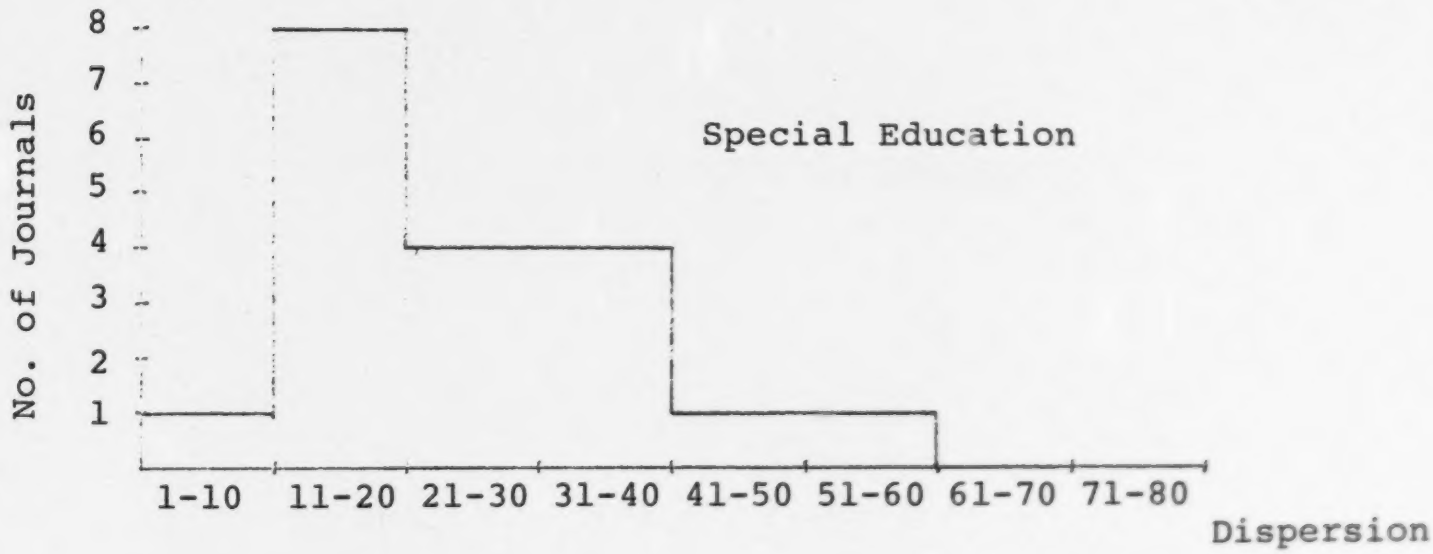
| 66% | Psychology | Special Education | General Education |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | Counsl Ed | | |
| 4 | J Acoust So | | |
| | J Vrb Lrn | | |
| 5 | | | |
| 6 | | | |
| 7 | J Am Stat A | | |
| 8 | J Exp Child | | |
| | J Exp Psych | | |
| 9 | J Pers | J Reh Deaf | |
| 10 | J Appl Beh | | |
| | J Coun Psyc | | |
| | Perc Psych | | |
| | Psychomet | | |
| | Psychonom S | | |
| 11 | | | |
| 12 | Ed Psy Meas | | Res Quart |
| 13 | Beh Res The | Tran Sch B | |
| | J Clin Psyc | | |
| 14 | J Soc Psyc | | |
| 15 | J Educ Psyc | Volta Rev | |
| 16 | J Cons Clin | J Sp He Re | J Educ Meas |
| 17 | J Abn Psych | Ment Ret | Child Dev |
| 18 | J Appl Psyc | Yng Child | Rev Ed Res |
| | J Nerv Ment | | |
| 19 | | Am Ann Deaf | |
| 20 | Psych Rev | Am J M Def | |
| | Reh Couns B | Sightsaving | |
| 21 | Perc Mot Sk | Spec Educ | |
| | Pers Guidan | | |
| 22 | Psych Bull | | Read Teach |
| 23 | Psych Repts | | J Res Sci |
| 24 | | J Sp He Di | |
| 25 | Am Psych | | J Reading |
| | | | Soc of Educ |
| 26 | | New Outlook | Br J Ed Psy |
| | | | J Teach Ed |
| 27 | | | Educ Res |
| 28 | | | |
| 29 | | Children | Am Ed Res J |
| | | | Read Res Q |
| 30 | | | |
| 31 | | Acad Ther | |
| 32 | | | |
| 33 | J Sch Psyc | | J Educ Res |
| | Ment Hyg | | |

FIGURE 9 - 66 PERCENT DISPERSION DISTRIBUTION

| 66% | Psychology | Special Education | General Education |
|---|---|---|---|
| 34 | | | |
| 35 | J Com Physl<br>Psyc School | Gif Child Q | |
| 36 | | | |
| 37 | | | |
| 38 | | Excpt Child<br>J Rehab | |
| 39 | | | |
| 40 | | | Elem Sch J |
| 41 | | | J Exp Educ |
| 42 | | J Spec Ed | Comp Ed Rev |
| 43 | | | High School |
| 44 | | | Education |
| 45 | | | Sch Rev |
| 46 | Am J Orthop | | |
| 47 | | | |
| 48 | J Ment Def | | |
| 49 | | | |
| 50 | | | Harv Ed Rev |
| 51 | | | |
| 52 | | | |
| 53 | | | |
| 54 | | | |
| 55 | | | |
| 56 | | | |
| 57 | | | Record |
| 58 | | | J Sec Educ |
| 59 | | | |
| 60 | | J Learn Dis | |
| 61 | | | |
| 62 | | | |
| 63 | | | J Educ<br>J Sch Heal |
| 64 | | | |
| 65 | | | |
| 66 | | | |
| 67 | | | |
| 68 | | | |
| 69 | | | |
| 70 | | | |
| 71 | | | |
| 72 | | | |
| 73 | | | |
| 74 | | | Educ Forum |

FIGURE 9 - 66 PERCENT DISPERSION DISTRIBUTION (Cont)



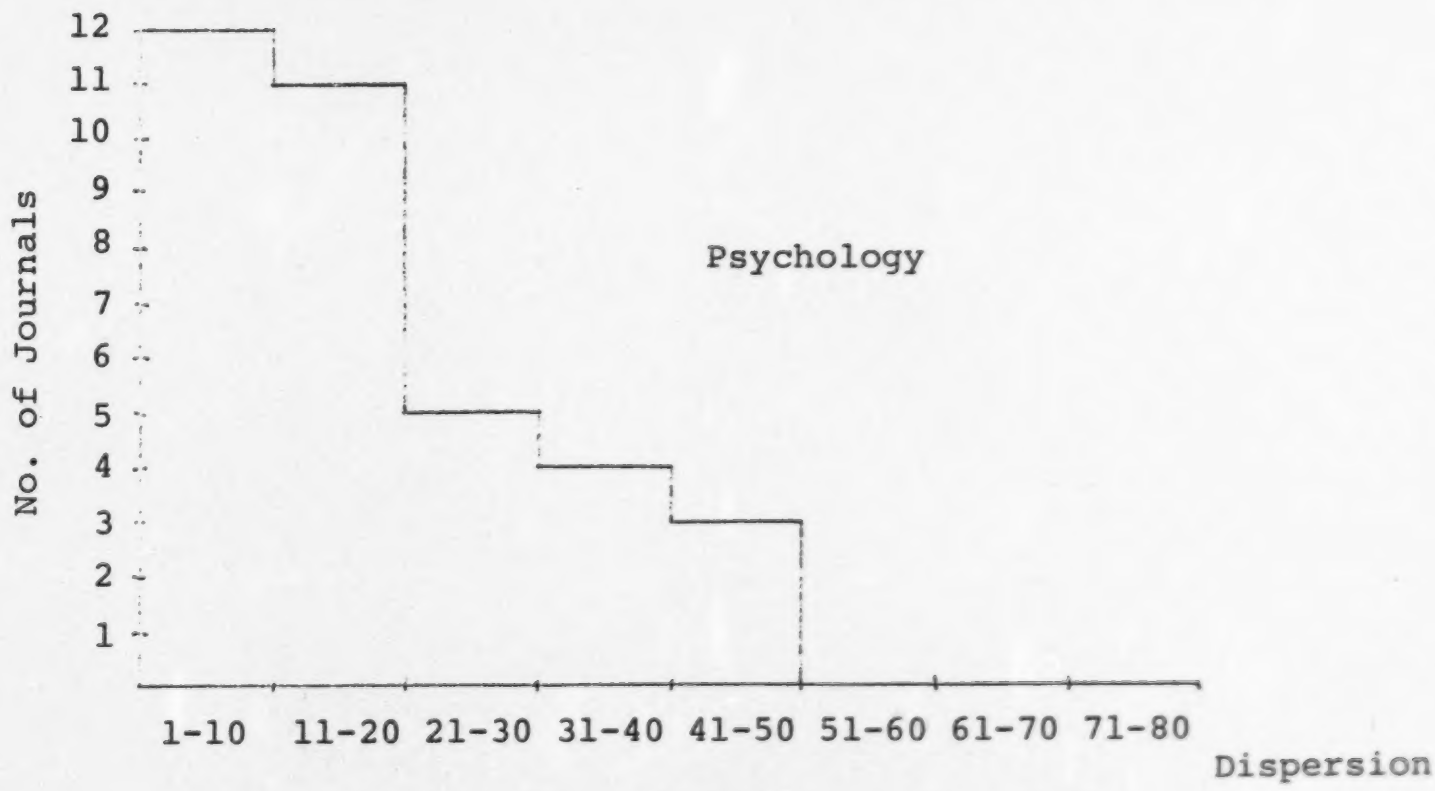




FIGURE 10 - DISPERSION HISTOGRAMS

of very great importance to special education, and may be the basic field from which much progress in special education stems.

Although the referencing structure from special education is relatively dispersed, a small number of journals will still encompass most of the requisite information. An adequate special education library could be constructed from a group of five to ten special education journals, no more than five general education journals, and perhaps ten to twenty psychology journals.

One can also conclude that a thorough grounding in abnormal and social psychology, and experimental psychology, is very important to the field of special education. This is almost mandatory for a researcher in the field. Familiarity with the concepts and methodology of abnormal, social and experimental psychology would be highly desirable for a teacher. It seems clear that a grounding in the relevant areas of psychology is more important than a grounding in many areas of general education. In fact, it can almost be argued, although our coverage of general education was very incomplete, that for general education research itself it is more important that there be a thorough grounding in psychology than that there be a grounding in many areas of general education.

## VI. RECOMMENDATIONS

The recommendations which can be made based on this study are divisible into three areas; recommendations to the librarian, recommendations for a special education curriculum, and recommendations for research funding.

To the librarian it is clear that the most elementary special education library must contain the following journals, which are referenced first or second by many of the included journals.

- American Journal of Mental Deficiency
- Child Development
- Exceptional Children
- Journal of Abnormal and Social Psychology
- Journal of Experimental Psychology

Additional special education journals, referenced at least five times per quarter of the included special education journals, would enhance the basic coverage. These are:

- American Annals of the Deaf
- Children
- Journal of Learning Disabilities

- Journal of Special Education
- Journal of Speech and Hearing Disorders
- Journal of Speech and Hearing Research
- Mental Retardation
- New Outlook for the Blind
- Sight-Saving Review
- Special Education
- Volta Review

A more extensive library should also include the following journals, all of which are referenced more than five times per quarter by the included special education journals.

- American Journal of Orthopsychiatry
- Behaviour Research and Therapy
- Journal of the Acoustical Society of America
- Journal of Clinical Psychology
- Journal of Comparative and Physiological Psychology
- Journal of Consulting and Clinical Psychology
- Journal of Counseling Psychology
- Journal of Educational Psychology
- Journal of Mental Deficiency Research
- Journal of Nervous and Mental Disease
- Journal of Personality
- Journal of School Psychology
- Mental Hygiene
- Perceptual and Motor Skills
- Psychological Bulletin
- Psychological Review
- Psychonomic Science

The recommendations for the special education curriculum is for a thorough grounding in the appropriate areas of psychology. It appears, at least from the research viewpoint, that special education is much, much more dependent upon psychology than it is upon general education, and therefore a teacher or a research scientist should have a thorough grounding in the appropriate areas of experimental, abnormal, and social psychology.

From the point of view of research funding it should be clear that progress in some areas of special education research is dependent upon certain areas of psychology. Therefore, in planning research related to special education, consideration must be given to the underlying areas of psychological research. Conversely, from the point of view of special education, research of the kind published in the general education journals is of much lesser importance.

## VII. NOTES ON THE CLASSIFICATION OF JOURNALS

The British Journal of Educational Psychology was included as an educational journal for two reasons. First, it is classified as such by the Library of Congress. Of the 40 references which we tabulated in the journal as being to general education, 20 were self-referencing so that half of the general education references to the British Journal of Educational Psychology are due to self-referencing and would be, for example, to psychology if it were classified as a psychology journal.

The Journal of the Acoustical Society of America has a psychology section, and for this reason it is tabulated here as a psychology journal.

Child Development refers mostly to psychology and is cited very heavily both by psychology and education. We have classified it as general education because the Library of Congress classifies it as education; we feel that it is borderline and could make a strong argument for its being classified in psychology. This would reduce even more the dependence of other fields upon general education.

The Journal of the American Statistical Association was arbitrarily classified as psychology to keep it within the included categories.

There is a growing clinical interest, on the part of the occupational therapists, in special education of children with neurological problems and learning disabilities. The American Journal of Occupational Therapy may, in the future, begin to reflect this.

## VIII. REFERENCES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